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## CLAIMS

1        1. A polishing solution for metal, comprising an  
2 oxidizing agent, an oxidized-metal dissolving agent, a  
3 first protective-film forming agent, a second  
4 protective-film forming agent different from the first  
5 protective-film forming agent, and water.

1        2. The polishing solution for metal according to  
2 claim 1, wherein said first protective-film forming agent  
3 is at least one selected from a group of ammonia, amines,  
4 amino acids, imines, azoles, mercaptans and saccharides.

1        3. The polishing solution for metal according to  
2 claim 2, wherein said first protective-film forming agent  
3 is at least one selected from among benzotriazole and a  
4 derivative thereof.

1        4. The polishing solution for metal according to  
2 claim 1, wherein said first protective-film forming agent  
3 is a compound capable of forming a protective film by  
4 forming physical adsorption and/or chemical linkage on

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5 the metal film surface.

1 5. The polishing solution for metal according to  
2 claim 1, wherein said second protective-film forming  
3 agent is compounds having an alcoholic or phenolic  
4 hydroxyl group, esters, ethers, polysaccharides, amino  
5 acid salts, polycarboxylic acids, polycarboxylates,  
6 vinyl polymers, amides, azo compounds and molybdenum  
7 compounds.

1 6. The polishing solution for metal according to  
2 claim 5, wherein said second protective-film forming  
3 agent is at least one selected from a group of polyacrylic  
4 acids, polymethacrylic acids, polyamic acids, ammonium  
5 polyacrylates, ammonium polymethacrylates, ammonium  
6 polyamides and polyacrylamides.

1 7. The polishing solution for metal according to  
2 claim 1, wherein said second protective-film forming  
3 agent is a compound which assists the first  
4 protective-film forming agent in forming a protective  
5 film.

1 8. The polishing solution for metal according to

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2 claim 1, wherein said oxidizing agent is at least one  
3 selected from a group of hydrogen peroxide, nitric acid,  
4 potassium periodate, hypochlorous acid and ozone water.

1 9. The polishing solution for metal according to  
2 claim 1, wherein said oxidized-metal dissolving agent is  
3 at least one selected from a group of an organic acid,  
4 an ammonium salt of an organic acid, and sulfuric acid.

1 10. The polishing solution for metal according to  
2 claim 9, wherein said oxidized-metal dissolving agent is  
3 at least one selected from a group of malic acid, tartaric  
4 acid, citric acid, ammonium malate, ammonium tartarate  
5 and ammonium citrate.

1 11. A polishing solution for metal, having a  
2 chemical mechanical polishing rate of 100 nm/minute or  
3 higher and an etching rate of 10 nm/minute or lower.

1 12. The polishing solution for metal according to  
2 claim 11, wherein said etching rate is 1 nm/minute or  
3 lower.

1 13. The polishing solution for metal according to

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2 claim 11, wherein said chemical mechanical polishing rate  
3 is 250 nm/minute or higher.

1 14. The polishing solution for metal according to  
2 ~~any one of claims 11 to 13~~, which comprises an oxidizing  
3 agent, an oxidized-metal dissolving agent, a first  
4 protective-film forming agent, a second protective-film  
5 forming agent different from the first protective-film  
6 forming agent, and water.

1 15. A polishing solution for metal, comprising:  
2 a first protective-film forming agent which is a  
3 compound capable of forming a protective film by forming  
4 physical adsorption and/or chemical linkage on the metal  
5 film surface; and  
6 a second protective-film forming agent which is a  
7 compound which assists the first protective-film forming  
8 agent in forming a protective film.

1 16. The polishing solution for metal according to  
2 claim 1, ~~11 or 15~~, which is used to polish a metal  
3 containing at least any one of copper, a copper alloy,  
4 a copper oxide and a copper alloy oxide.

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1 17. The polishing solution for metal according to  
2 claim 1, ~~11 or 13~~, which substantially does not contain  
3 any abrasive grains.

1 18. The polishing solution for metal according to  
2 claim 1, wherein said second protective-film forming  
3 agent is a compound which enables the first  
4 protective-film forming agent to be added in a smaller  
5 quantity; the first protective-film forming agent being  
6 necessary for controlling etching rate to 10 nm/minute  
7 or lower.

1 19. A polishing method comprising polishing a metal  
2 film formed on the surface of a polishing object, in the  
3 polishing solution for metal according to claim 1, ~~11 or~~  
4 ~~13~~ to remove the metal film.

1 20. The polishing method according to claim 19,  
2 wherein said metal film contains at least any one of  
3 copper, a copper alloy, a copper oxide and a copper alloy  
4 oxide.

1 21. The polishing method according to claim 19,  
2 wherein;

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3        said polishing object has a multi-layer film having  
4        a metal layer containing at least any one of copper, a  
5        copper alloy, a copper oxide and a copper alloy oxide;  
6        said polishing method being a method of removing at  
7        least part of the metal film from the multi-layer film.

1        22. The polishing method according to claim 19,  
2        wherein said polishing solution for metal substantially  
3        does not contain any abrasive grains.

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